

Potential Propane Waste
At Prudhoe Bay

AOGCC on June 19, 2012

Harold Heinze

Outline of Propane Issues

Raised By Heinze on 12/07/12

- There is a local market for Prudhoe Bay propane delivered via trucking to home and automotive users in Northern & Interior Alaska
- The local propane market could be supplied by an existing propane recovery facility at the Prudhoe Bay Unit (PBU) Central Gas Facility (CGF) that is only operated infrequently
- Failure to make propane commercially available to this local beneficial use will result in lost recovery and constitutes “waste” within the meaning of the Alaska Oil and Gas Conservation Act (AS 31.05)

Local Market for Propane

- Alaskan private sector companies have offered to and will install all the facilities to store and load propane made available by the PB Unit Operator
- PB Unit Owners have indicated their willingness to sell propane commercially if available for taking from the PB Unit Operator
- Companies and communities are prepared to participate in the propane logistical chain from the North Slope (NS)
- Alaskans have written about the importance of a local in-state propane source
- BPXA studied using propane in their NS truck fleet
- NW Arctic Borough studies show major consumer benefits for a propane fuel alternative

Operation of the CGF

Based on the BPXA Letter To AOGCC on 02/06/12

- The volume of PB gas processed (6.8 BCFPD) is well below the stated gas capacity of 8.7 BCFPD
- The CGF propane recovery of 35% is extremely low compared to normal “gas plant” operations (70%)
- CGF operations maximize butane NGLs for blending in TAPS & off-lease use in the Kuparuk
- Adjusting the CGF plant operational parameters to recover an additional 0.5% (35.0% to 35.5%) would allow 500 barrels per day (bpd) of propane to be available without impacting miscible injection operations or miscibility pressure specifications

<u>Propane Streams At PBU Central Gas Facility</u>									
CGF Data from BPXA letter to AOGCC on 02/06/12									

<u>Stream</u>	<u>C3 %</u>		<u>C3 Equiv</u>		<u>Gas Flow</u>		<u>C3 Flow</u>
	mole %		Bbls/mmscf		(mmscf/d)		(bpd)
CGF Feed	2.45		16		6,838		109,163
Resid Gas	1.65		10.8		6,584		70,787
Propane Recovery in CGF=					35.2%		38,376

Propane Manufacturing Capability

- Full-time operation of the existing propane recovery facility (currently limited to 1.5 days/month) at its 500 bpd capacity is dwarfed compared to the 70,000 bpd of propane (= 3,000,000 gals/day) currently being re-injected not as miscible injectant, but with the residue gas not in contact with the oil zone
- Over 750 bpd of propane and over 7,500 bpd of butane currently leave the PB Unit without be made available for the SOA to take royalty in-kind for Alaskan energy consumers satisfying the Constitutional & statutory preference for in-state unmet energy needs

Propane in Gas Uses Supplied by CGF

CGF Data from BPXA letter to AOGCC on 02/06/12

<u>Stream</u>	<u>C3 %</u> mole %	<u>C3 Equiv</u> Bbls/mm scf	<u>Gas Flow</u> (mm scf pd)	<u>C3 Flow</u> (bpd)	
MI	25.7	167.5	210	35,167	86.3%
Refridg	25.7	167.5	0	25	0.1%
TAPS NGL	1.60	10	44	454	1.1%
Kup NGL	1.60	10.4	26	274	0.7%
Fuel	1.65	10.8	400	4,301	10.6%
North Star	1.65	11	50	538	1.3%
Total Uses =				40,758	100.0%

<u>Butane Volumes --- PB Unit CGF</u>						
		<u>C4 Mole %</u>	<u>Gas Flow</u> (mmscfpd)			<u>Butane</u> (bpd)
CGF Feed		0.62	6,838			32,433
Residue Gas		0.21	6,584			10,577
		Butane Recovery at CGF =		67%		21,855
MI		1.1	210			1,767
NGL - TAPS		45.1	37	28.4 kbpd		12,808
NGL - KRU		45.1	22	17.1 kbpd		7,712
		Total Uses of Butane =				22,288

Failure to Market Produced Propane Is “Lost Production” & “Waste”

- Prudhoe Bay field operations will cease before all the propane in the current residue gas re-injection stream will be recovered during future gas sales
- The propane in the gas residue stream (two-thirds) is being injected into an area of the PB field that may have a lower than average gas recovery factor (interference from gas cap water injection)
- The current confidential lawsuit arbitration between BPXA and the State of Alaska (SOA) over lost production valuation during in-field pipeline replacement for corrosion includes similar claims

Suggestions On PB Unit NGL Operations

- Changed conditions (ie, decline of TAPS oil rate) since approval of the PB miscible injection project two decades ago warrant a full public review of performance and future plans
- CGF performance data should be timely available under parameters similar to current well production reporting (neither confidential or proprietary)
- BPXA should be ordered to present to AOGCC (publicly) a full review of additional PB Unit propane production opportunities including facility modifications and additions